Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Services and Operational Fixed Microwave Licensees	)	WT Docket 10-153
Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al	)	WT Docket 09-106
Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.	)	WT Docket 07-121
Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition	)	RM-11417

To: The Commission

EIBASS Comments to Further Notice of Proposed Rulemaking and Petition for Partial Reconsideration

1. Engineers for the Integrity of Broadcast Auxiliary Services Spectrum (EIBASS) hereby respectfully submits its comments and *Petition for Partial Reconsideration* of the August 9, 2011, *Report and Order, Further Notice of Proposed Rulemaking, and Memorandum Opinion and Order* (in combination, "Order") relating to flexibility for Part 74 Broadcast Auxiliary Services (BAS) stations, and other issues. The Order was published in the Federal Register on September 27, 2011, so this EIBASS Petition for Partial Reconsideration and comments to the Further Notice of Proposed Rulemaking (FNPRM), intentionally filed early on September 9, 2011, is now being re-filed so as to make the filing within the required 30-day filing window for Petitions for Reconsideration. Other than this changed introductory language, a new date, and an updated datecode, this filing is identical to the September 9 EIBASS filing.

I. Petition for Partial Reconsideration and Clarification

2. EIBASS is pleased with most of the decisions reached in the Order. Those decisions represent a reasonable balancing of the needs of TV BAS licensees and the needs of Private Operational Fixed Service (POFS) licensees for more backhaul spectrum. Nevertheless, there are two issues in the Report and Order (R&O) portion of the Order that EIBASS believes warrant reconsideration and/or clarification: The failure to adopt a bright-line interference criteria for protection of 7 and 13 GHz electronic news gathering receive-only (ENG-RO) sites, and how quickly 7 and 13 GHz TV Pickup licensees must add their ENG-RO site(s) to their licenses.

II. The Commission Is Doing a Disservice To Both TV BAS and POFS Licensees by Not Adopting a Protection Standard for ENG-RO Sites

3. At Paragraph 25 the Commission declined to adopt a standard for POFS licensees to use to demonstrate protection of an ENG-RO site, yet Footnote 91 stated that

> EIBASS correctly notes that the Commission had used that standard in evaluating interference to TV Pickup facilities.

Footnote 91 was referring to the October 21, 2004, ET Docket 00-258 Seventh R&O. The no-more-than-0.5 dB-noise-threshold-degradation standard adopted for Department of Defense (DoD) uplinks to use when demonstrating protection of 2 GHz ENG-RO sites is entirely appropriate for POFS licensees to use when demonstrating protection of 7 and 13 GHz ENG-RO sites (and 2.5 and 6.5 GHz ENG-RO sites, as well). The Order stated, as justification for this puzzling-to-EIBASS decision, that

> Generally, in lieu of mandating specific interference criteria in our rules, we expect applicants and licensees to work out interference issues in the frequency coordination process.

4. EIBASS submits that a vague frequency coordination benchmark does neither the incumbent nor the newcomer any favor, because of the uncertainty it generates. Also, what may be viewed as an adequate demonstration of frequency coordination by the newcomer may be seen as an inadequate demonstration by the incumbent, thus drawing out the frequency coordination process, and even leading to disputes that the Commission would then be required to mediate.

5. Thus, EIBASS suggests that if the Commission won't accept the already established for 2 GHz ENG no-more-than-0.5 dB-noise-threshold-degradation benchmark for 7 and 13 GHz TV BAS ENG-RO sites, then it should at least provide the 0.5 dB benchmark as a "safe harbor" that

newcomer POFS stations can rely upon, if they wish. Such an approach would allow the newcomer POFS applicant and the incumbent TV BAS licensee to use some other frequency coordination benchmark if they wish, but would give POFS entrants the certainty of knowing that their Section 101.103(d) Prior Coordination Notice (PCN) showing could not be disputed if the 0.5 dB safe harbor benchmark was demonstrated. That said, EIBASS is still holding out hope that the Commission will establish the 0.5 dB-noise-threshold-degradation benchmark based both on Commission precedent in the DoD uplink protection requirement for 2 GHz ENG-RO sites and current agreement among experienced engineers who have done the math.[1]

6. As was stated at Paragraph 6 of the EIBASS November 22, 2010, reply comments, and expanded at Paragraph 7 of the June 27, 2011, EIBASS Further Notice of Inquiry (FNOI) comments, that calculation could assume a 20 dBi gain ENG-RO antenna and a -95 dBm receiver noise threshold, but no off-axis pattern rejection or cross-polarization rejection, since ENG-RO sites typically use either a real-time remotely steerable directional receiving antenna or an omni directional receiving antenna, and TV Pickup stations are generally polarization-agile. Any terrain blockage, or even blockage by a large building, could be factored in when making the calculation, although EIBASS notes that ENG-RO sites are often at the tops of tall buildings, or near the top of broadcast towers, precisely to minimize such blockages. Nevertheless, if a newcomer POFS transmitting antenna is aimed away from an ENG-RO site, and/or has blockage to the ENG receiving antenna, then both factors could (and should) be taken into account when making a "safe harbor" showing of no more than 0.5 dB noise degradation.

III. What Is Deadline for 7 and 13 GHz TV Pickup Stations to Add Their ENG-RO Sites?

7. At Paragraph 31 of the Order, the Commission decided that all 7 and 13 GHz TV Pickup licensees must add their fixed ENG-RO sites to their licenses. This decision was a surprise (albeit pleasant) to EIBASS, because no party proposed this, and the NPRM did not mention that the Commission was considering making the registration of 7 and 13 GHz TV BAS ENG-RO sites mandatory. While EIBASS has encouraged TV Pickup licensees to do this ever since the Commission modified the Universal Licensing System (ULS) to accommodate the registration of ENG-RO sites, as a result of a multi-year effort by the Society of Broadcast Engineers, Inc.

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[1] It should be noted that Section 2.5.5 of TSB 10F, *Interference Criteria for Microwave Systems*, cited in the Section 101.105(c) of the FCC rules as a safe harbor protocol for POFS PCNs, gives a 1 dB noise threshold noise degradation interference criteria between digital microwave links; further, Section 101.105(b) of the FCC rules also uses that criteria. EIBASS additionally notes that it was the Commission that further strengthened the criteria to 0.5 dB in the ET Docket 00-258 Seventh R&O.

(SBE),[2] the addition of new Section 74.605 of the FCC rules, requiring such registration, raises corollary issues.

8. First, what will the deadline for such registrations be? The effective date of the new rules, thirty days after publication in the Federal Register? Or will a longer period be allowed, to in turn allow word to get out to TV Pickup station licensees? EIBASS suggests the latter, with the longer period being six months after publication of the Order in the Federal Register.

9. Next, EIBASS asks that the initial registration of 7 and 13 GHz ENG-RO sites be treated as fee-exempt administrative updates, as this will avoid having to create a revised Appendix B Final Regulatory Flexibility Act analysis, which did not address the issue of the license modification filing fee that 7 and 13 GHz TV Pickup licensees would otherwise have to pay.

10. Another corollary issue is what time period will be allowed to update (modify) a TV Pickup license when a licensee adds a new ENG-RO site, or modifies the location or height of an existing ENG-RO site? Zero, meaning that a modified TV Pickup license must be obtained first? Ten days? Thirty days? EIBASS suggests a thirty-day deadline for a TV Pickup modification application, documenting the new/modified ENG-RO site.

11. The Commission needs to clarify whether the now mandatory addition of an ENG-RO site to a 7 or 13 GHz TV Pickup license will be considered a major or minor change. What about modification of an ENG-RO site? Would the Section 1.929(d)(1)(i) trigger of ±5 seconds in latitude or longitude, or Section 1.929(d)(1)(iv) height change of greater than +3 meters, apply?

12. Finally, the Commission needs to confirm that the frequency coordination procedures table given in Paragraph 63 of the November 13, 2002, ET Docket 01-75 R&O, allowing either local or prior (Part 101 PCN) coordination for "mobile" 7 and 13 GHz stations, applies to ENG-RO sites. That is, the addition or modification of an ENG-RO site, after the initial round of registrations, could be covered by local BAS coordination; a Part 101 PCN would be allowed, if for some reason a TV Pickup licensee wanted to use the Part 101 PCN protocol, but not required.

13. EIBASS believes that an existing POFS link should not be required to protect a new or modified ENG-RO site that gets added after the POFS link is licensed, although given the restriction that neither the POFS transmit or receive site, or any portion of the path, can invade

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[2] Namely, RM-11308, successfully culminating in the Commission's April 16, 2008, public notice, DA 08-892, *Wireless Telecommunications Bureau Announces ULS Upgrade/Licensees of Television Pickup Stations Now Have the Option To Identify Their Stationary, Receive-Only Sites on ULS To Aid Coordination with Other Services*. Note the "option" term, meaning *voluntary.*

the operational area of record of an existing co-channel TV Pickup station, EIBASS would not expect this to be a problem, so long as the new/modified ENG-RO site is located inside that operational area. Indeed, EIBASS believes that it would be appropriate for the Commission to add such a restriction.

IV. FNOI Issues

14. EIBASS wishes to address one of the Further Notice of Proposed Rulemaking (FNOI) issues: Relaxed antenna standard for POFS links in non-congested, or "rural," areas. The issue here is not the antenna size, but rather the antenna's electrical performance. As noted at Paragraph 70 of the Order, compliance with the Category A and Category B minimum antenna performance requirements has no physical antenna size requirement, only electrical requirements. The proposed substitution of an alternative physical size metric would open the way for mischief. Antenna benchmarks should remain only electrical performance criteria, and physical size should remain irrelevant. If a manufacturer can provide a physically smaller antenna that meets Category A or Category B performance criteria, more power to that manufacturer.

15. However, the documentation that a smaller size microwave antenna meets Category A or Category B performance criteria must be credible. As EIBASS sees it, the Commission has a duty to both existing and future licensees to require measurement data of an antenna's performance if interested parties raise reasonable questions about the actual electrical performance of a physically small microwave antenna. And, of course, the Commission should have the option of requiring credible proof on its own initiative.

16. At Paragraph 71, the Order states "smaller antennas have the increased potential to cause interference." EIBASS believes this point is unclear at best and misleading at worst, since a newcomer link is always required to demonstrate protection of incumbent links. If the newcomer station uses a less directive transmitting antenna, that showing becomes more difficult, but must still be made. Thus, smaller sized microwave antennas do not have increased risk of interference; they have increased risk of precluding later-in-time stations from being able to be added. In other words, relaxed microwave antenna performance is a spectrum efficiency issue, not an interference issue.

17. In the ET Docket 03-254 rulemaking, regarding Mobile Satellite Service (MSS) feeder uplinks and downlinks sharing the 7 and 13 GHz TV BAS bands (and also the 10 GHz POFS band), the Commission considered a county-based "growth zone" metric, with 30 or more

terrestrial microwave paths per county being a trigger. However, SBE was able to demonstrate that while a county-based metric generally worked well for states east of the Mississippi, where counties tended to be small, that metric fell apart for western states, where many of the counties are bigger than entire eastern states.[3] Thus, the Commission ended up not adopting the number of terrestrial microwave paths per county as a metric, although the subsequently decreased need for MSS feeder uplinks and downlinks was also a factor in not adopting a county-based growth zone metric.[4] Nevertheless, EIBASS mentions it here as an example of the difficulty in establishing a non-frequency congested, or "rural area," metric that will withstand the test of time.

18. Similarly, in the MB Docket 90-500 rulemaking, the SBE asked the Commission to define BAS frequency congested areas, but the Commission ultimately terminated that rulemaking without taking action, because of difficulty in defining BAS-frequency congested areas that all broadcasters could agree upon. Finally, in the WT Docket 96-35 rulemaking, again regarding Category A and B antenna standards, the Commission attempted to update its definition of POFS frequency congested areas, but again ultimately gave up that effort. Indeed, the FCC web site still shows horribly outdated, 1979 vintage lists of frequency congested areas for several POFS microwave bands.[5]

V. One EIBASS MO&O Issue: Full-Spectrum, Full-Arc Protection for Satellite Stations

19. At Paragraph 115 of the MO&O portion of the Order, the Commission states it will address the issue of protection of satellite receiving stations for all possible frequencies and all possible look angles; this is so-called full-spectrum, full-arc protection. Such protection is especially

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[3] From Paragraph 2 of the March 18, 2004, SBE comments to the ET Docket 03-254 rulemaking:
> However, SBE feels that a county-based definition is a poor choice given the wide variability of county sizes throughout the USA. There are 3,489 counties/parishes in the United States. For the contiguous United States, they range in land area from only 25 square kilometers for Bristol County, Rhode Island, to 20,062 square kilometers for San Bernardino County, California. Indeed, the three largest counties in the contiguous United States, San Bernardino, Coconino County in Arizona at 18,617 square kilometers, and Nye County in Nevada at 18,147 square kilometers, are each larger than the land areas of nine states: Connecticut, Delaware, Hawaii, Maryland, Massachusetts, New Hampshire, New Jersey and Rhode Island. Thus, a preclusion area– or growth zone– model based on small counties typical in eastern states, and large counties typical in western states, appears to SBE to be arbitrary and unrealistic.

[4] See the January 20, 2010, ET Docket 02-254 R&O, at Paragraph 24.

[5] See http://transition.fcc.gov/oet/info/maps/microwav/, *Private Microwave Congested Areas*. This FCC web page states: "This list is based on 1979 data. A revised list will be published as soon as an analysis of the current data base is complete." But updated lists of frequency congested POFS areas have never been published.

problematic for non-geostationary low-Earth orbit (LEO) satellites, because the downlink antenna must track the satellite as it comes over the horizon, travels across the sky, and then disappears below the horizon. This results in the downlink antenna eventually painting out a wide arc of azimuths and elevation angles, which makes terrestrial co-channel links required to protect the downlink all the more difficult. A similar problem exists the other way, for uplinks communicating with non-geostationary satellites: Over time, the main beam of the uplink ends up being directed to a wide arc of azimuths and elevation angles, making the uplink an unnecessarily broad interference threat to terrestrial operations when the uplink is authorized to use a wider band of channels than needed for its initial operation.

20. The Commission wouldn't allow a TV BAS point-to-point link to request more frequencies than it initially needs, or to reserve paths that might be desired in the future; the coordination has to be only for the immediately needed frequency and path. It should be the same for satellite Earth stations that share spectrum with terrestrial microwave stations. If satellite Earth stations need to communicate with a different satellite or use other frequencies, the operator should submit a new frequency coordination, just as a terrestrial fixed link that wishes to modify its path is obligated to do.

21. EIBASS therefore urges the Commission to address the full-arc, full-spectrum issue for any satellite band shared with terrestrial microwave stations forthwith, as full-spectrum, full-arc protection of downlinks is spectrum inefficient, and unnecessarily precludes terrestrial links that share spectrum with space-to-Earth services. Such spectrum warehousing[6] needs to be abolished sooner rather than later.

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[6] EIBASS notes that in Paragraph 190 of the April 2, 2003, WT Docket 03-66 NPRM the Commission stated: "We note that the Communications Act requires us to adopt polices to deter spectrum warehousing, promote the rapid development and deployment of new technologies and services, and promote service to rural areas." 47 USC (Communications Act), Section 309(j)(4)(B).

VI. Summary

22. EIBASS congratulates the Commission in striking a reasonable balance between the needs of 7 and 13 GHz TV BAS stations and more backhaul spectrum for POFS stations. In EIBASS' view, only one tweak, and one clarification, are needed to the R&O portion of the Order. The "rural areas" definition in the FNOI portion of the Order may prove more difficult than it first appears. Finally, in the MO&O portion, the Commission needs to re-visit the impact of protecting satellite downlink stations on a full-spectrum, full-arc basis, which is spectrum inefficient and a *de facto* form of spectrum warehousing that should be abolished.

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September 27, 2011

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